

We Claim:

1 1. A heat pump system having an indoor coil that operates as a
2 condenser when the system is in a heating mode and an outdoor coil that operates as
3 an evaporator when the system is in said heating mode, wherein said system
4 includes:

5 adjustable airflow means for moving supply air over the indoor coil;
6 a sensor means for measuring outdoor ambient temperatures and sending
7 ambient temperature data to a programmable computer for adjusting said airflow
8 means;

9 program means in said computer containing a schedule for continuously
10 adjusting the airflow means in response to changes in ambient temperatures to
11 maintain the temperature of the supply air moving over the indoor coil at a constant
12 level.

1 2. The system of claim 1 wherein said adjustable airflow means includes
2 a variable speed fan.

1 3. The system of claim 1 wherein said supply air temperature is
2 maintained at a level that is high enough to avoid a cold blow condition in the supply
3 airflow.

1 4. The system of claim 3 wherein the discharge pressure of the
2 compressor is maintained at a level such that the vapor line pressure remains below
3 an allowable design pressure.

1 5. The system of claim 3 wherein said supply air temperature is
2 maintained at a constant level above 98°F and a vapor line pressure below 370PSIG.

1 6. The system of claim 1 wherein the temperature of the supply air is
2 maintained as high as possible while controlling the vapor line pressure and
3 compressor pressure ratio within allowed limits.

1 7. The system of claim 3 wherein said vapor line pressure limit is within
2 established standard refrigeration vapor line piping pressure limits.

1 8. The system of claim 7 wherein said compressor pressure ration limit
2 is within established limits for reliable operation of a compressor.

1 9. A heat pump system having an indoor coil that operates as a
2 condenser when the system is in a heating mode and an outdoor coil that operates as
3 an evaporator when the system is in said heating mode, wherein said system
4 includes:

5 a compressor having a discharge pressure;
6 adjustable airflow means for moving supply air over the indoor coil;
7 a sensor means for measuring outdoor ambient temperatures and sending
8 ambient temperature data to a programmable computer for adjusting said airflow
9 means;
10 program means in said computer containing a schedule for continuously
11 adjusting the airflow means in response to changes in ambient temperatures to
12 maintain the compressor discharge pressure within reliable operating limits.

1 10. The system of claim 9 wherein said adjustable airflow means includes
2 a variable speed fan.

1 11. The system of claim 10 wherein said operation limits are within
2 established standard limits for refrigeration grade vapor line piping..

1 12. The system of claim 11 wherein the discharge pressure of the
2 compressor is maintained at a substantially constant level.

1 13. A method of operating a heat pump in the heating mode, said heat
2 pump having a compressor, an indoor coil serving as a condenser in the heating
3 mode, and an outdoor coil acting as an evaporator in the heating, said method
4 including the steps of:
5 sensing the outdoor ambient temperature;

6 continually adjusting the indoor airflow over the indoor coil in response to
7 changes in the outdoor temperature to maintain the supply air temperature at a
8 constant level.

1 14. The method of claim 13 wherein the indoor airflow over the indoor
2 coil is adjusted by regulating the speed of a coil fan motor for passing return air over
3 the coil.

1 15. The method of claim 13 wherein the temperature of the supply air is
2 maintained at a level above which a cold blow condition occurs.

1 16. The method of claim 13 that includes the further step of maintaining
2 the discharge pressure of the compressor at a level below a maximum allowable
3 vapor line pressure for the system.

1 17. A method of operating a heat pump in the heating mode, said heat
2 pump having a compressor, an indoor coil serving as a condenser in the heating
3 mode, and an outdoor coil acting as an evaporator in the heating, said method
4 including the steps of:

5 sensing the outdoor ambient temperature;
6 continually adjusting the indoor airflow over the indoor coil in response to
7 changes in the outdoor temperature to maintain compressor discharge pressure
8 within reliable operating limits.

1 18. The method of claim 17 where the indoor airflow over the indoor coil
2 is adjusted by regulating the speed of a coil fan motor for passing return air over the
3 coil.

1 19. The method of claim 18 wherein said operating limits are within
2 established standard limits for refrigeration guide vapor line piping.

1 20. The method of claim 19 that includes the further step of maintaining
2 the discharge pressure of the compressor at a substantially constant level.